

CLAIMS

1. Apparatus for providing electronic control of an electric heating assembly in which a radiant electric heater (10, 110) is arranged at a lower surface of a glass-ceramic cooking plate (12, 112), the cooking plate having an upper surface for receiving a cooking vessel (42, 136A, 136B), the apparatus comprising: a temperature sensor (24, 140) for monitoring temperature at or adjacent to the cooking plate, which sensor provides an electrical output as a function of temperature; and control means (30, 142) connected to the temperature sensor and to the heater, for controlling energising of the heater from a power supply (28, 134), the control means being adapted and arranged to energise the heater at a plurality of user selectable power levels including a full power level, characterised in that when the heater (10, 110) is energised at the full power level it is energised to heat the cooking plate (12, 112) to a first temperature level for a predetermined initial period of 20 to 50 minutes and is thereafter energised to heat the cooking plate to a second temperature level, lower than the first temperature level.
2. Apparatus as claimed in claim 1, characterised in that during an initial minor proportion of the predetermined initial period the heater (10, 110) is energised at a boost temperature level, in excess of the first temperature level.
3. Apparatus as claimed in any preceding claim, characterised in that the second temperature level is between about 75 percent and about 85 percent of the first temperature level.

- 21 -

4. Apparatus as claimed in claim 3, characterised in that the second temperature level is about 83 percent of the first temperature level.

5 5. Apparatus as claimed in any preceding claim, characterised in that the length of the predetermined initial period is dependent on the time elapsed since the control means (30, 142) was last at the full power level.

10 6. Apparatus as claimed in claim 5, characterised in that the length of the predetermined initial period is inversely proportional to the time elapsed since the control means (30, 142) was last at the full power level.

15 7. Apparatus as claimed in any preceding claim, characterised in that reduction from the first temperature level to the second temperature level is effected in a continuous manner.

20 8. Apparatus as claimed in any one of claims 1 to 6, characterised in that reduction from the first temperature level to the second temperature level is effected in a stepwise manner.

25 9. Apparatus as claimed in claim 8, characterised in that reduction from the first temperature level to the second temperature level is effected in a single step.

30 10. Apparatus as claimed in claim 8, characterised in that reduction from the first temperature level to the second temperature level is effected in a plurality of steps.

35 11. Apparatus as claimed in any preceding claim, characterised in that the control means (30, 142)

- 22 -

comprises a microprocessor-based controller (32, 144) into which the predetermined initial period and a setting for the second temperature level are permanently programmed for automatic implementation.

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12. Apparatus as claimed in any preceding claim, characterised in that the temperature sensor (24, 140) provides an electrical output as a function of temperature of the upper surface of the glass-ceramic cooking plate (12, 112).

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13. Apparatus as claimed in any preceding claim, characterised in that the temperature sensor (24, 140) comprises a device whose electrical resistance changes as a function of temperature.

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14. Apparatus as claimed in claim 13, characterised in that the temperature sensor (24, 140) comprises a platinum resistance temperature detector.

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15. Apparatus as claimed in any preceding claim, characterised in that the temperature sensor (24, 140) is provided on, or spaced behind, the lower surface of the glass-ceramic cooking plate (12, 112).

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16. Apparatus as claimed in any preceding claim, characterised in that the heater (110) has a main heating zone (118) at least partly surrounded by at least one additional heating zone (120), the main heating zone being energisable alone or together with the at least one additional heating zone.

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17. Apparatus as claimed in claim 16, characterised in that the at least one additional heating zone (120) is

- 23 -

arranged substantially concentrically with the main heating zone (118).

18. Apparatus as claimed in claim 16, characterised in
5 that the at least one additional heating zone (120) is arranged against at least one side of the main heating zone (118).

19. Apparatus as claimed in claim 18, characterised in
10 that at least one additional heating zone (120) is arranged at opposite sides of the main heating zone (118).

20. Apparatus as claimed in any one of claims 16 to 19,
15 characterised in that the predetermined initial time is about 20 minutes to about 40 minutes when the main heating zone (118) is energised together with the at least one additional heating zone (120), and is about 30 minutes to about 50 minutes when the main heating zone
20 (118) is energised alone.

21. Apparatus as claimed in any preceding claim, characterised in that the predetermined initial time is about 20 minutes to about 40 minutes.

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22. A method of providing electronic control of an electric heating assembly in which a radiant electric heater (10, 110) is arranged at a lower surface of a glass-ceramic cooking plate (12, 112), the cooking plate
30 having an upper surface for receiving a cooking vessel (42, 136A, 136B), the method comprising: providing a temperature sensor (24, 140) for monitoring temperature at or adjacent to the cooking plate, which sensor provides an electrical output as a function of
35 temperature; and providing control means (30, 142)

- 24 -

connected to the temperature sensor and to the heater,
for controlling energising of the heater from a power
supply, the control means being adapted and arranged to
energise the heater at a plurality of user selectable
5 power levels including a full power level, characterised
in that when the heater (10, 110) is energised at the
full power level it is energised to heat the cooking
plate (12, 112) to a first temperature level during a
predetermined initial period of 20 to 50 minutes and is
10 thereafter energised to heat the cooking plate to a
second temperature level, lower than the first
temperature level.

23. A method according to claim 22, characterised in
15 that during an initial minor proportion of the
predetermined initial period the heater (10, 110) is
energised at a boost temperature level, in excess of the
first temperature level.

20 24. A method according to claim 22 or 23, characterised
in that the second temperature level is between about 75
percent and about 85 percent of the first temperature
level.

25 25. A method according to claim 24, characterised in
that the second temperature is about 83 percent of the
first temperature level.

26. A method according to any one of claims 22 to 25,
30 characterised in that the length of the predetermined
initial period is dependent on the time elapsed since the
control means (30, 142) was last at the full power level.

27. A method according to claim 26, characterised in
35 that the length of the predetermined initial period is

- 25 -

inversely proportional to the time elapsed since the control means (30, 142) was last at the full power level.

28. A method according to any one of claims 22 to 27,
5 characterised in that reduction from the first temperature level to the second temperature level is effected in a continuous manner.

29. A method according to any one of claims 22 to 27,
10 characterised in that reduction from the first temperature level to the second temperature level is effected in a stepwise manner.

30. A method according to claim 29, characterised in
15 that reduction from the first temperature level to the second temperature level is effected in a single step.

31. A method according to claim 30, characterised in
20 that reduction from the first temperature level to the second temperature level is effected in a plurality of steps.

32. A method according to any one of claims 22 to 31,
characterised in that the control means (30, 142)
25 comprises a microprocessor-based controller (32, 144) into which the predetermined initial period and a setting for the second temperature level are programmed for automatic implementation.

30 33. A method according to any one of claims 22 to 32, characterised in that the temperature sensor (24, 140) provides an electrical output as a function of temperature of the upper surface of the glass-ceramic cooking plate (12, 112).

- 26 -

34. A method according to any one of claims 22 to 33, characterised in that the temperature sensor (24, 140) comprises a device whose electrical resistance changes as a function of temperature.

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35. A method according to claim 34, characterised in that the temperature sensor (24, 140) comprises a platinum resistance temperature detector.

10 36. A method according to any one of claims 22 to 35, characterised in that the temperature sensor (24, 140) is provided on, or spaced behind, the lower surface of the glass-ceramic cooking plate (12, 112).

15 37. A method according to any one of claims 22 to 36, characterised in that the heater (110) has a main heating zone (118) at least partly surrounded by at least one additional heating zone (120), the main heating zone being energisable alone or together with the at least one
20 additional heating zone.

38. A method according to claim 37, characterised in that the at least one additional heating zone (120) is arranged substantially concentrically with the main
25 heating zone (118).

39. A method according to claim 37, characterised in that the at least one additional heating zone (120) is arranged against at least one side of the main heating
30 zone (118).

40. A method according to claim 39, characterised in that at least one additional heating zone (120) is arranged at opposite sides of the main heating zone
35 (118).

- 27 -

41. A method according to any one of claims 37 to 40,
characterised in that the predetermined initial time is
about 20 minutes to about 40 minutes when the main
heating zone (118) is energised together with the at
5 least one additional heating zone (120), and is about 30
minutes to about 50 minutes when the main heating zone
(118) is energised alone.

42. A method according to any one of claims 22 to 41,
10 characterised in that the predetermined initial time is
about 20 minutes to about 40 minutes.

43. An electric heating assembly whenever controlled by
the method of any of claims 22 to 42.